



# FICEMS

Federal Interagency Committee on EMS

## National Pre-Hospital and Hospital Data Integration Summit

Summary

March 2020

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## Executive Summary

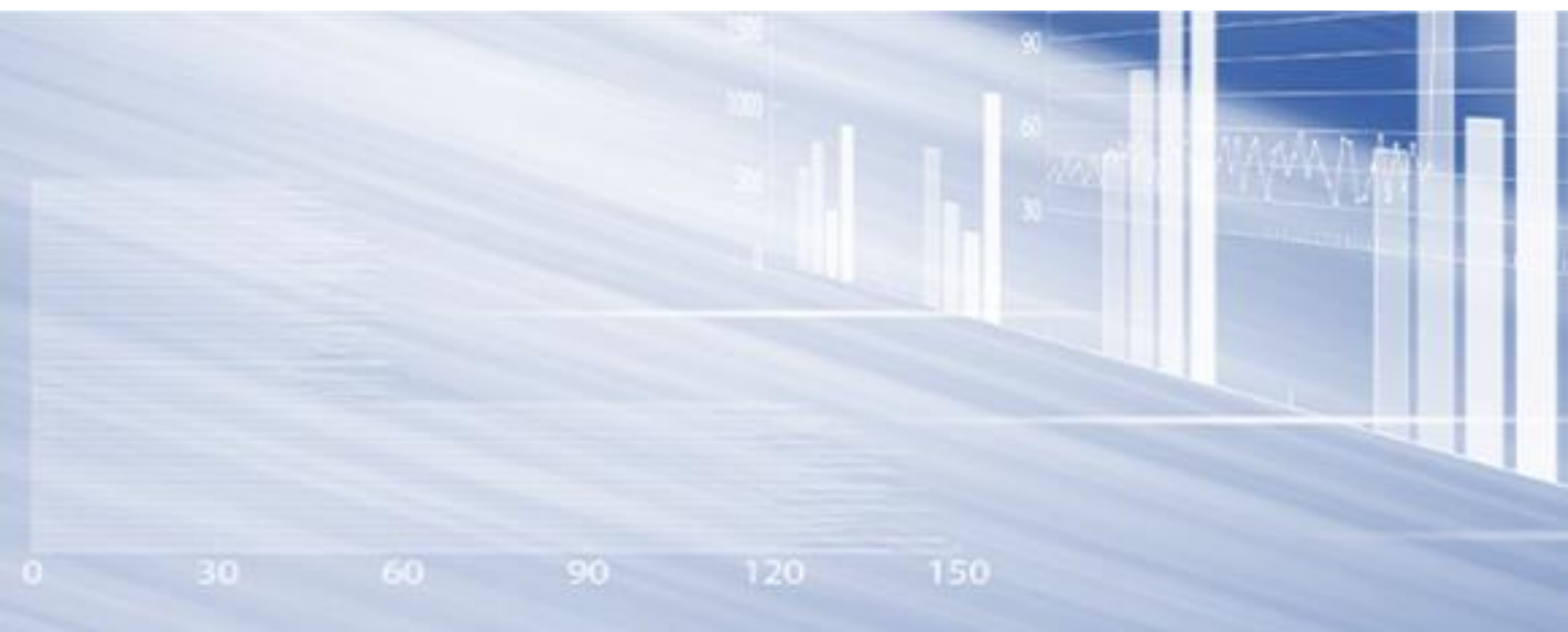
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The Federal Interagency Committee on Emergency Medical Services (FICEMS), in cooperation with the Department of Health and Human Services (HHS) Office of the National Coordinator for Health Information Technology (ONC), and the Department of Transportation (DOT) National Highway Traffic Safety Administration (NHTSA), hosted the National Pre-Hospital and Hospital Data Integration Listening Session Summit (Summit) on January 29, 2020. FICEMS hosted the Summit to listen to and gain insights from stakeholders on the exchange of health data and information to enhance patient care across the healthcare continuum.

Over 130 stakeholders representing state and local authorities, professional societies, health systems, hospitals, health information exchanges (HIEs), and private sector companies participated in the Summit held in Washington, DC. The Summit included presentations and associated panel discussions of the presenters on the current state of pre-hospital and hospital data collection and integration, as well as the future of data exchange between emergency medical services (EMS), hospitals, and other healthcare entities. The Summit was a success and hailed by many participants as valuable in bringing together disparate groups across the healthcare continuum and multiple levels of government to discuss important healthcare data integration issues.

This summary document describes the major discussions held during the Summit and important underlying issues inherent in data exchange and integration across healthcare systems. The document is organized by key topics from the presentations and discussions, including major challenges, legal and technical complexities, standards, and incentives for change. Highlights of detail from the presentations are also included. Appendices include the Summit [agenda](#) and presenter [biographies](#). Summit presentations may be obtained from the Summit [website](#). Contact information for attendees is available upon request from [nhtsa.ems@dot.gov](mailto:nhtsa.ems@dot.gov).

The vision set forth in *EMS Agenda 2050* calls for a people-centered approach to EMS that includes a more seamless system with fewer silos. The effort to reach that vision must include enhanced integration of pre-hospital, hospital, and other healthcare data. Integrating data systems and allowing more access to critical information can help pre-hospital, hospital, and other clinicians provide safer, more effective, and more efficient patient care. The Summit represents a solid starting point for greater collaboration on data collection and integration across the Nation's healthcare systems.



## Introduction

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The United States health system is composed of vastly different institutions, each with its own mission, resources, and restrictions. The pre-hospital EMS system and hospital or clinic patient care system are fragmented and disconnected by differing documentation processes, structures, and practices.

To realize optimal benefits, there must be the ability to systematically and routinely have bi-directional information flow between pre-hospital electronic patient care reports (ePCRs) and hospital electronic health records (EHRs). Such capability will lead to integration of standardized pre-hospital data and the hospital and clinic EHRs. At the present time, such interoperable capability does not exist throughout most of the Nation. Typically, EMS personnel provide hospital emergency department (ED) staff with an oral debrief and either a paper or an electronic—PDF format—patient care report (PCR) that provides information concerning pre-hospital care. Furthermore, EMS clinicians are typically not able to receive routine health care system data.

The struggle to obtain optimal benefits from data use is compounded by the ongoing evolution of the Nation's emergency care system. There are currently three EMS use cases for HIE as described by HHS, including day-to-day EMS operations, mobile integrated health care and community paramedicine, and emergency preparedness.<sup>1</sup> The Centers for Medicare and Medicaid Services (CMS) recognizes this ongoing evolution in emergency care and has created a five-year pilot payment model—the Emergency Triage, Treat, and Transport (ET3) Model—that involves EMS providers assessing and providing services that may result in care delivered on-scene with no transport, or delivered with transport to a clinic, physician office, or hospital ED.<sup>2</sup> Standardized and routine bi-directional information flow between ePCRs and EHRs is crucial for this system to function and to improve acute care performance and outcomes.

Interoperability and sharing health care information between EMS agencies and health care systems has been a focus of FICEMS for many years and has been reinforced by the vision of *EMS Agenda 2050*.<sup>3</sup> Although a great deal of progress has been made over the last several years, efforts have been disjointed and in need of increased coordination. Therefore, FICEMS, in cooperation with HHS ONC and DOT NHTSA, organized and hosted the Summit to convene important stakeholders and build bridges between separate successes to date at local, state, and regional levels in data sharing and integration across the Nation.

## Data Integration Major Challenges

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### Data Types

EMS providers, ED departments, and other health providers across the healthcare continuum collect vast amounts of data in a wide variety of ways. Data sharing and integration efforts are challenged with identifying the most important data to collect that can and should be shared. Defining the most important data varies based on the setting in which it is collected (e.g., 911 dispatch, fire department, emergency site, ambulance, ED, or health clinic). Developing agreement among disparate stakeholders across the healthcare continuum with differing data types and requirements is a complicated endeavor and will require continued collaboration.

For many jurisdictions across the Nation, information exchange from EMS to an ED, or other healthcare entity is done verbally, with simple paper reports, or later faxed. For those that submit digital documents, the documents are often in static text (e.g., PDF). Text-based information often must be transcribed on the receiving end to be useful, which requires time and resources. More effective data integration can occur with the exchange of discrete data elements in common format files (e.g., XML). Adopting discrete data collection is a major challenge for EMS and the broader healthcare community, but so, too, is converting text to discrete data.

Another challenge of data integration is that there are multiple sources of the same or similar data involved, as well as multiple places to send data once it has been collected. This increases the complexity of data sharing and can increase lag times and data discrepancies.

## Data Flow

How data is exchanged between users, organizations, and systems is another major challenge for data integration. Important issues to consider when adopting or enhancing data exchange and integration include identifying where EMS ePCRs are placed within the broader healthcare system EHR, and in what format (e.g., separate ePCR sections, integrated throughout, or attached as text). Coupled with data location and format challenges are automation issues such as push-versus-pull data exchange. EMS-entered data may be sent to an HIE or directly to the intended destination of the patient for placement into their EHR (push), or a clinician receiving the patient may need to request the ePCR from the HIE or the EMS organization for integration into the EHR (pull). Push or pull may be automatic once the ePCR has been initiated, depending on the systems used.

Proprietary systems designed for healthcare data exchange and integration often have highly protected intellectual property. Therefore, the sharing of technical details about data exchange systems may be prevented due to sensitive trade secrets. This can limit the range of options for data integration between ePCR, HIE, and EHR systems.

One of the available solutions to help address data type and flow challenges is the Search, Alert, File, and Reconcile (SAFR) Model. The SAFR Model offers a common framework for bi-directional data exchange from an HIE organization to the on-scene EMS clinician, and from the EMS clinician back to the receiving facility and the HIE organization.<sup>4</sup>

### *Pre-hospital to Emergency Department Data Exchange: A SAFR Transition of Care*

*SAFR is an electronic tool used to connect pre-hospital with hospital clinical data by enabling users to:*

- ***Search*** a patient's health record in the HIE for problems, medications, allergies, and end-of-life decisions to enhance clinical decision making in the field
- ***Alert*** the receiving hospital about the patient's status directly onto a dashboard in the ED to provide decision support
- ***File*** the EMS patient care report data directly into the patient's EHR for a better longitudinal patient record
- ***Reconcile*** the EHR information, including diagnoses and disposition, back into the EMS PCR for use in improving the EMS system

*SAFR leverages National Emergency Medical Services Information System (NEMSIS) 3.4, so any ePCR software vendor can connect to SAFR. SAFR can now be used on smartphones, tablets, and personal computers in first-responder vehicles, and it can capture patient information from paramedics and hospitals. A user simply enters the patient's name, date of birth, and social security number. This information is sent to the HIE, which returns information on the patient, such as previous encounters, medical history, and allergies.*

*The paramedic can then accept the information and add it to the patient's record. The paramedic uses this information to select the receiving hospital, and he or she sends the record to that hospital. The physician at the hospital can pull up details on the patient's location, chief complaint, and vital signs. This information allows EMS providers to transport the patient to the right hospital and ensure that the patient receives the right treatment.*

*For more information, see the [ONC Overview of the SAFR Model for HIE](#).*

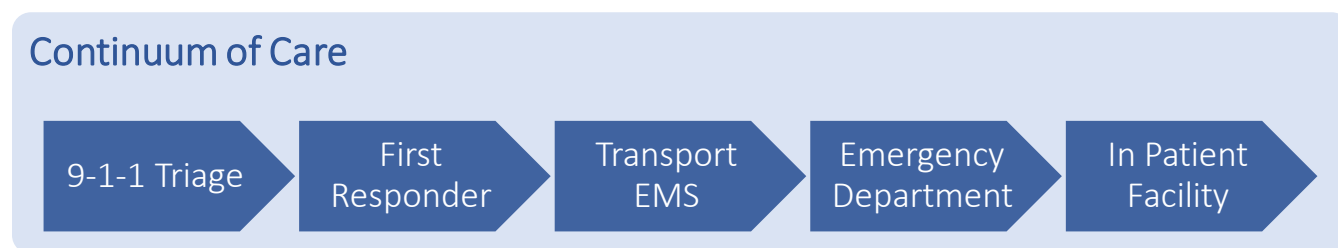


## Culture

EMS and hospital practitioners acknowledge that professional culture and established workflows can be significant barriers to advancing data exchange and integration. Pre-hospital and broader healthcare system clinicians constantly work toward better efficiency with best practices and standard operating procedures. These established norms are deep-set and difficult to change, with many organizations reluctant to adopt new data measures and systems.

## Quality Control

Ensuring the quality and accuracy of healthcare data is an important goal for data sharing and integration, yet it comes at a high price. Quality control of data can be difficult, time consuming, and resource intensive. Staffing for data quality control is often limited. Data sharing and integration systems with clear quality control provisions will be very valuable as systems advance. Data that is collected once and appropriately distributed is more efficient and less prone to error than resubmitting information at every step in the continuum of care (as depicted below).



## Identification and Matching

### Clinician Identification

Identifying EMS clinicians is an important component of integrating and tracking data for patients' care. The bi-directional integration of EMS data with hospital and other datasets (including providing outcomes data) requires a database of EMS clinicians. The National Registry of Emergency Medical Technicians (NREMT) recently launched and is building a registry that will have data available on EMS personnel in many states. This data can be used to link clinicians to ePCRs. The EMS Personnel Licensure Interstate CompAct (REPLICA, or EMS Compact) is the national multi-state licensure compact for the EMS profession.<sup>5</sup> REPLICA information can be expanded upon and support wider clinician identification under normal operating circumstances. See also the [Access and Credentialing](#) section.

### Patient Matching Challenges

Accurately and efficiently matching patients to EHRs and ePCRs is essential to realizing the many benefits and goals of data sharing and integration. Often, a patient's identity is unknown or not readily apparent in emergency medical situations. Matching an unconscious patient or one with no identifying documents to a record using date of birth, last name, or Social Security number can be difficult. Patients typically do not want to disclose their Social Security numbers, and therefore matching using names alone can be challenging. Accurately matching a patient with ambiguous information to an existing identification record takes time and resources.

The EMS field has many sources of information to draw upon for patient identification, including patient driver's licenses, HIEs, and hospital EHRs. Driver's licenses are naturally highly valuable for identification because they are updated regularly. Biometric identification methods can include fingerprint, facial, and retinal recognition.

The technology for biometrics is readily available. No single biometric may be effective, but a combination could be very effective.

The Patient Unified Lookup System for Emergencies (PULSE) is a nationwide health IT disaster response platform that can be deployed at the city, county, or state level to authenticate disaster healthcare volunteer providers. PULSE allows disaster workers to query and view patient documents from all connected healthcare organizations. PULSE is a public-private collaborative that includes HHS, the Office of the Assistant Secretary for Preparedness and Response (ASPR), ONC, state agencies, and the private sector to support Americans in times of disaster and could be incorporated in more day-to-day data sharing and integration.<sup>6</sup>

As data sharing and integration systems improve and are broadly adopted, these challenges may be ameliorated. However, advances in patient matching cannot solve all such issues. Legitimate concerns for patient privacy and safety (including cybersecurity) will continue to challenge the entire healthcare system. Risks of patient mismatching are a significant concern (e.g., incorrect medication or treatment, or unknown pre-existing conditions) with potentially serious health, financial, and legal consequences. See the [HIPAA Concerns](#) section.

### *The Role of Hospital EHRs in Integration*

*Thousands of EDs are served by a corporation that is collaborating with several ePCR vendors to improve communications. The [Joint Commission Record of Care](#) standards established that any emergency care, treatment, and service to the patient before arrival in the ED should be part of the EHR. The challenge is that this information is typically not inserted into the EHR contemporaneously.*

*A clinician who receives patient information from an EMS clinician before patient arrival can enter that information into the shared EHR system. This information becomes part of a tracker, which can be posted in the EMS bay to inform the EMS clinician where to take the patient. The tracker roughly describes the patient's condition and provides an estimated time of arrival.*

*For example, a PDF version of the EMS chart is incorporated into the EHR, where it is easy to find. However, the document is not formatted optimally for the hospital clinician because the demographic information (which may not be important to hospital clinicians) is at the top. The narrative provides the paramedic's impressions, and the record contains electrocardiogram (ECG) findings, although these ECG findings are not combined with other ECG records in the EHR.*

*A trial use of the integration system in an ED found that the rate of EMS run sheet uploads into the EHR within 2 hours rose from 40% at baseline to as high as 98% during the trial. Abstracters typically needed to track down run sheets and then enter the information manually. The system therefore saves a great deal of time and resources.*

*Vendors have an opportunity to collaborate on developing a standard for transfer of discrete EMS data elements to the EHR and to integrate EMS information and EMS run sheets contemporaneously into the EHR.*

## National Patient Identifier

The concept of a national patient identifier (NPI) as a potential solution to patient matching challenges has been discussed by government and the healthcare industry for over 25 years. The Health Insurance Portability and Accountability Act (HIPAA) called for the development of a national patient identifier system that would give each person in the U.S. a permanently assigned, unique number to be used across the entire spectrum of the national healthcare system.<sup>7</sup> However, development of the NPI was prevented by Congress soon after due to privacy concerns.

Discussions regarding the NPI have continued since 1996 and in late 2019, Congress directed ONC to coordinate with other appropriate federal agencies to assess the current technological and operational methods used to improve patient identification and provide Congress with a report on those efforts in one year. The report will also include recommendations for ways to increase the accuracy of matching patients with their healthcare data, which may or may not include a standard for a unique patient health identifier.<sup>8</sup>

## Legal and Technical Complexities

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### HIPAA Concerns

There is a great deal of concern about running afoul with HIPAA rules in relation to sharing healthcare data. This has led to frequent reluctance to, and confusion about sharing data between healthcare organizations, whether from EMS to hospitals, or from hospitals, clinics, or HIEs back to EMS. It is likely that there are many misconceptions regarding what is and is not permissible with patient data, as well as what would trigger a violation under the law. Communication with hospital stakeholders (e.g., HIPAA coordinator, or hospital general counsel) therefore can be difficult for EMS organizations when working to adopt or enhance data sharing and integration. Software and technical limitations of segmenting EHRs to share the most appropriate data with EMS are additional challenges.

Targeted collaboration of appropriate government and industry stakeholders will be needed to confront this issue to advance data integration throughout the Nation. Defining and implementing the sharing of data minimally necessary for care would be an important focus of such collaboration. Federal guidance on HIPAA concerns related to data sharing and integration with EMS would also be valuable.

### Patients as Stakeholders

Patients are important stakeholders in the effort to advance data sharing and integration. Patients are rightfully concerned about their privacy and safety as related to their healthcare data, yet can be brought into the discussion to advocate for advancements. When patients are familiar with their own data, they are more willing to share their data to support research and the improvement of care. Patient participation in the ongoing effort to improve data sharing and integration may help lessen the concerns and reluctance to share data in light of HIPAA protections.

### Access and Credentialing

Managing access and credentialing for ePCR, EHR, and HIE data can be very complex. Defining and maintaining who can and should have access to what data across the healthcare continuum is an important topic for continued collaboration. The technical aspects of access and credentialing are also important, especially interoperability across different systems, platforms, and jurisdictions.

As mentioned previously, REPLICA is the national multi-state compact for the EMS profession under which state EMS offices afford immediate legal recognition to EMS personnel licensed in any other member state. As REPLICA expands to include more states, it could be leveraged to support managing access and credentialing as they relate to data sharing and integration.



### *Prehospital PCRs and Integrating EMS Data*

*Nearly all EMS agencies use software for documentation, and these systems follow the same national data standards (i.e., NEMSIS). All ePCR vendors communicate with NEMSIS, and all collect the required data elements and submit them electronically to states, which then submit the data to the national registry.*

*EMS clinicians often give ED physicians a printed PCR or summary, which transmits the information to the ED physician in a timely way. However, the information cannot be changed, and it must be converted into discrete data elements. Additionally, this approach does not provide deep, meaningful integration of EMS data into the hospital EHR system. An alternate option is to use Clinical Document Architecture (CDA), but without a meaningful use mandate, hospitals are unlikely to do so.*

*Integration options for various formats of data on both sides can easily become very expensive, such as developing custom web services, direct messaging through data clearinghouses and adopting new standards (e.g., HL7 FHIR).*

*Current trends in EHR interoperability include HIE integration, standardization of outcome information transmission from hospitals to EMS agencies, and integration of EMS data into specialty patient registries. These efforts all help to move data sharing and integration forward, but more can be done.*

*Major opportunities to enhance data sharing and integration include:*

- *Eliminating interoperability barriers directly related to misconceptions about HIPAA requirements for quality improvement programs and the continuum of care*
- *Providing incentives for implementation of Integrating the Healthcare Enterprise (IHE) initiative and NEMSIS interoperability profiles, which will require meaningful exchange of discrete EMS data elements with hospitals*
- *Requiring reciprocal delivery of standards-based outcome information to EMS agencies*

## Standards

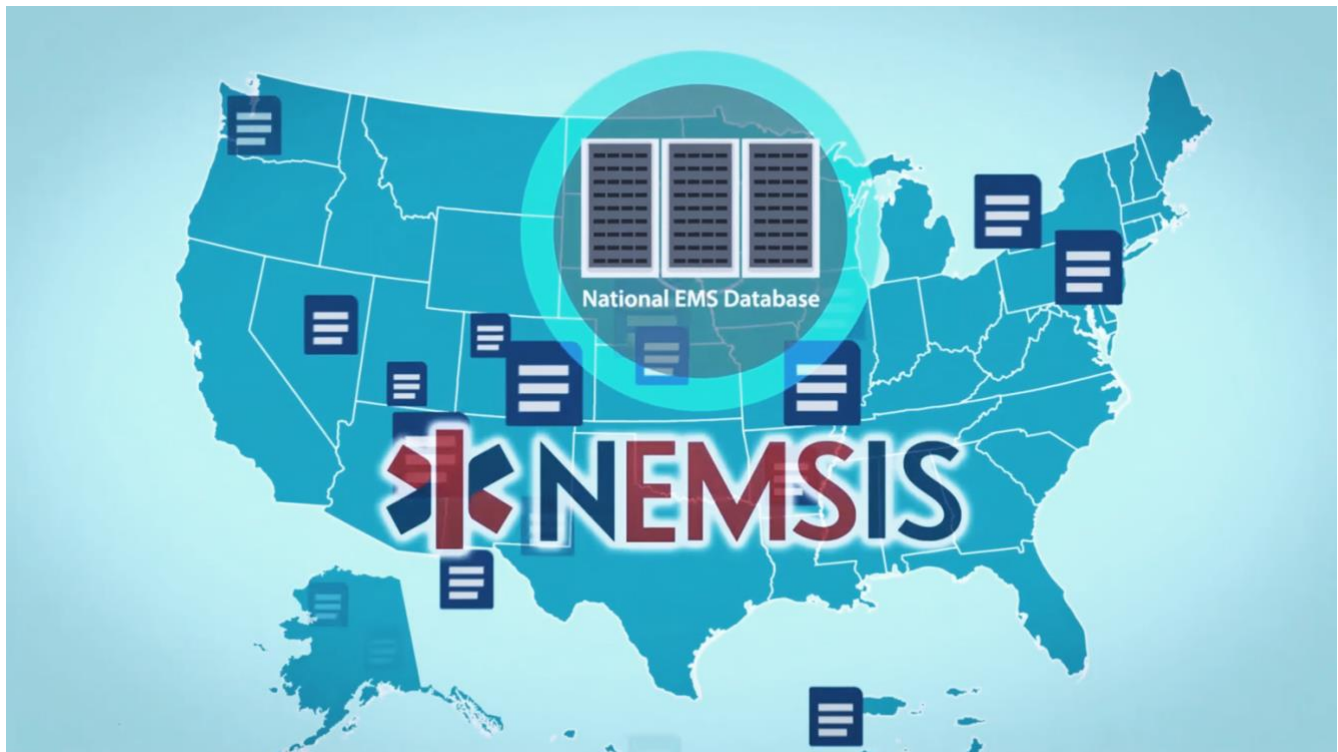
### Multiple Standards, Specific Uses

There are many standards actively being used for data sharing and integration across the Nation's healthcare system. The Health Level Seven International (HL7) standards and the NEMSIS and are two prominent examples associated with pre-hospital and other healthcare system data. As is common with any standard, and especially with technical data standards, NEMSIS and HL7 issue versions as the standards update and evolve. At a given point in time, different EMS organizations, HIEs, or hospitals may be using different versions of any of these standards, which increases complexity in the overall healthcare system. As the standards evolve, systems and organizations that use and engage with the associated data need to be agile to change with the standards.

HL7 standards provide a framework for the exchange, integration, sharing, and retrieval of electronic health information. Similarly, NEMSIS was developed as the framework for collecting, storing, and sharing standardized EMS data from states nationwide. NEMSIS has been aligned with HL7 standards since its version 3.0 for greater interoperability with the broader healthcare community and is currently accepting data under version 3.4.<sup>9</sup> HL7 standards versions 2 and 3 are currently in wide use. Version 3 includes the CDA standard that specifies a document structure for exchange between healthcare providers. Fast Healthcare Interoperability Resources (FHIR) is a newer interoperability HL7 standard with a strong focus on web service technology.<sup>10</sup> All of these

standards, designed to improve data sharing and interoperability, leverage Extensible Markup Language (XML) encoding of data so that the data is able to be read by humans and machines. Other international standards have been developed to track emergency patients and hospital availability specifications, including a common alerting protocol used in more than 100 countries. An XML data standard or wrapper could be developed so that systems operating under any of these standards could transmit data to and from HIEs.

Though there are many different standards used today that support data sharing and integration, there is disagreement among practitioners about how well data can be integrated between the different standards and how well the standards can meet requirements outside of the environment for which they were intended.



## Implementation Challenges

With multiple available standards designed for data sharing and integration, questions arise regarding why more organizations are not implementing the standards. It is possible that some organizations are not using the standards because they are unaware of the standards and their utility. For those organizations that are aware of, yet are not implementing the standards, potential reasons the standards have not been adopted more broadly include:

- Resistance to sharing data (from hospitals to HIEs or EMS)
- Wide variety of standards
- Lack of requirement for hospitals to adopt the NEMSIS standard
- Difficulty for hospitals to change their workflows, even if a new workflow is easier
- Different roles in the continuum of care may have different preferred standards or implementation methods

Coordinated communication and guidance from the federal government and other leading stakeholders may help to address these challenges.

## Integration Between Standards

Mapping data from one standard to another or from one software system to another is challenging. Though NEMSIS has been a success in driving national data collection and exchange within EMS, it doesn't ensure effective data exchange between pre-hospital and hospital systems. NEMSIS data often must be converted for integration into EHRs and a separate standard may be required for this conversion.

Large scale collaborations are ongoing to develop solutions to integration challenges, with limited success. The Sequoia Project and the CommonWell Health Alliance are major non-profit organizations focused on healthcare data exchange and interoperability that have agreements to enhance the interoperability between their separate systems and frameworks.<sup>11</sup> ONC issued the draft Trusted Exchange Framework and Common Agreement (TEFCA) to develop a nationwide exchange of healthcare data across disparate health information networks (HINs). TEFCA was designed to scale data exchange nationwide and help ensure that HINs, health care providers, health plans, individuals, and many more stakeholders have secure access to their electronic health information when and where it is needed. The Sequoia Project was designated by ONC as the coordinating entity responsible for developing, updating, implementing, and maintaining the Common Agreement component of TEFCA.<sup>12</sup> The American Hospital Association began work on a standard to integrate discrete data elements, but the effort has encountered difficulty finding hospitals and EHR vendors willing to test the standard.

Such efforts will need continued commitment from stakeholders to keep momentum moving forward on data sharing and integration. Including patient outcomes data in standards is an additional provision that could improve the effectiveness and participation in these integration efforts.

### *Overview of Pre-hospital Data Collection in the United States*

*NEMSIS is a documentation standard for the collection of information on patient care resulting from emergency 911 calls. NEMSIS provides the framework for collecting, storing, and sharing standardized EMS data from states nationwide.*

*States decide which data elements their EMS agencies must collect. To date, 47 states and territories have submitted 70 million PCR's from more than 10,000 EMS agencies to NEMSIS. Most other states have local NEMSIS systems but are not yet sending their data to the national database. Implementation of NEMSIS version 3 has greatly improved the quality of the data because this version presents validity rules to EMS clinicians at the time of data entry. Standards approved by the American National Standards Institute (ANSI) are now available for transmitting ePCR data from ambulances to EDs, but hospitals have been reluctant to implement them.*

*Ongoing plans for NEMSIS version 3.5.0 include manipulating the common clinical dataset (CDA) approved by CMS to contain NEMSIS elements and support implementation of the CDA at levels 1 and 3. Several HIE organizations have implemented processes to transmit outcomes data from the EHR to the ePCR, however implementation has been low.*

*Acceptance of NEMSIS 3.5.0 has begun in 2020. Vendors are anticipated to release their version 3.5.0 software in February 2021, and most systems are expected to be using version 3.5.0 by January 2022.*

*For more information, see [NEMSIS](#).*

## Differences in Pre-Hospital and Broader Healthcare System Data

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### Pre-Hospital Care

The different operating environments and cultures between pre-hospital care and the broader healthcare system lead to differences in data collection, use, and exchange. Key differentiators of pre-hospital care include:

- EMS personnel need a deeper understanding of how they are integrated in the healthcare system from 911 triage through post-acute care to support advances in data sharing and integration.
- Short patient interactions with limited information and little feedback makes improvement in field diagnosis and treatment difficult. The lack of a feedback loop to EMS on patient outcomes hinders advances.
- EMS systems often provide medical triage at 911 centers and may not send ambulances. Therefore, patients are not always sent to an ED or other patient facility.
- EMS ePCR standards and EHR standards have been developed independently, which can lead to integration difficulty, including challenges in identifying unconscious or incoherent patients (e.g., John or Jane Doe).

### Healthcare System

Important differences for data sharing and integration for hospitals, clinics, and other patient facilities include:

- There is a need for better understanding of how clinicians in the broader healthcare system could and would use EMS information.
- Human services data, such as housing and food insecurity, are useful for health care. For example, a home health agency could use the information to identify other services that could help stabilize a patient. Home health discharge information could also be valuable.
- Payers collect data on social determinants of health to measure the effects of addressing such issues. EMS clinicians could record related data during patient visits. For example, an EMS clinician might conduct a risk assessment on falling when entering a patient's home and then follow up on the results of this assessment to prevent the next EMS call.



### Role of EMS Services in Data Integration

*To improve data sharing with hospitals, the Prince George's County Fire/EMS Department participated with the Chesapeake Regional Information System for Our Patients (CRISP) in a pilot study on local EMS data, state EMS data, and regional HIE data integration. The County Department responds to approximately 150,000 emergency calls and conducts approximately 80,000 patient transports to hospitals per year. Whereas EMS operations were challenged by a lack of data ten years ago, there is currently an overabundance of data. Therefore, an efficient system to exchange data was sought to improve patient care and outcomes from the initial emergency call to the discharge from a hospital.*

*Through the pilot, CRISP identified outcomes data on mutual patients. Though the pilot was limited in size and outcomes data was delayed four to six weeks, the County Department saw the effort as successful. EMS clinicians routinely receive no outcomes data at all on their patients, due to identification challenges and mismatched records. Outcomes data is valuable for education and training for EMS clinicians but is also beneficial for the mental health of EMS clinicians, who want to know the outcomes of their patients.*

*Integration challenges uncovered in the pilot included identifying patients whose names could not be matched with their CRISP records and extra time and effort required for County Department staff to learn and translate terminology used by hospitals. The County Department continues to work with CRISP to improve data sharing and integration.*

## Value Propositions

### Enhance Time-Sensitive Care

One of the major benefits that advanced data sharing and integration could realize for the Nation's healthcare system is the enhancement of time-sensitive care for patients in need. Advanced EMS data integration could increase the speed of interfacility transfer and improve patient care by making the process more efficient. EMS clinicians would no longer need to gather paperwork before a transfer, resulting in decreased transfer time. Access to the record of an unresponsive patient for EMS clinicians could be lifesaving. Reviewing the EHR on the way to the patient would let EMS clinicians act more quickly and efficiently at times when shaved seconds can save lives. When patients are transferred from EMS to other care, updated EHR data would save time by eliminating the need for a physical or verbal hand-off of information. Data integration could also leverage the continuous quality improvement capabilities of software and help determine the accuracy of paramedic diagnoses. Paramedics could use information on previous patients to provide better care for future patients.

Patients or their families may be unable to provide reliable information that can affect initial care decisions and long-term outcomes. Knowledge of relevant health data, such as recent hospitalizations, past medical history, medications, allergies, preferred health care facilities, as well as end-of-life decisions, enables EMS clinicians to provide the most appropriate pre-hospital patient care and ensure transport to the proper health care facility. In addition, EMS may collect information from caregivers that can assist other providers with developing the best plan for the patient's care. This process improves the transition of care from one health care professional to another. These benefits encourage and show the value of adopting and improving data sharing and integration among providers across the healthcare continuum.



## Drive EMS Systems Improvements

System-wide improvements in EMS are anticipated and expected from improving data sharing and integration. The reason for collecting EMS data is to smooth transitions of care and improve care by EMS agencies and in the health care system. When paramedics arrive at a scene, they typically know very little about the patient. They must make critical and sometimes lifesaving but always time-sensitive decisions with minimal information. They routinely never find out what happened to their patients after transferring these patients to the hospital or other facility. Without feedback, paramedics will continue their standard procedures and will not have the opportunity to learn how to improve their care delivery. For example, feedback on patient outcomes may help reduce the incidence of profoundly dehydrated patients with pneumonia arriving at an ED on diuretic treatment or of patients with unrecognized diabetic emergencies.

EMS clinicians are more readily able to enact improvements when appropriate data is collected on outcomes. That which is measured well can be studied and improved upon. Advanced data exchanges could close the feedback loop, help paramedics make better decisions, and improve their diagnostic accuracy and clinical decision making. These data could be used as benchmarks to help EMS providers improve and be held accountable for excellence and quality improvement.

Mental health of EMS clinicians could also be improved with the knowledge of patient outcomes. Most ePCR records have only recently been able to collect outcomes data, and very few can link data across platforms. These capabilities are essential for developing quality metrics for EMS agencies. As the adoption of advanced systems such as FHIR increases, opportunities to share outcomes data increase, as well as opportunities to share data back to patients.

## Improve Education, Research, and Public Health

Advances in data sharing and integration could lead to improvements in health education, research, and overall public health. With increased use of data, there will be numerous new opportunities for different ways to analyze the data to tease out improvements in each of these fields. There is potential for cost savings for system-wide operations as well as insurance companies. In addition, data sharing and integration advances can help EMS organizations manage frequent, chronic users of EMS systems by better understanding those patients' risks and needs and helping them prevent repeated emergencies.

Though there are many potential benefits, EMS and broader healthcare organizations are challenged with maintaining realistic expectations about improvements. When EHRs and ePCRs were first promoted, physicians were told that taking the time to fill in the EHR would help them write prescriptions and discharge instructions, and they could use EHRs to see each patient's entire medical history, though this did not necessarily come to fruition. EMS personnel were told of similar advantages for ePCRs. Communication about the many benefits moving forward will need to appropriately manage such expectations.

## Incentives for Change

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### Clear Guidance from Leaders

Coordinated guidance from federal government leaders and leading private sector organizations can help with providing incentives to adopting data sharing and integration. Incentives for the EMS providers and hospitals collecting and sharing the data can ensure data quality and build bridges between successes in different jurisdictions, professions, and systems. For example, incentives could support the sharing of law enforcement data relevant to healthcare, such as information on mental health issues and drug offenses and interventions (which are important for EMS safety). Leading stakeholders can engage EMS clinicians to identify incentives that



would make a difference. For example, some might be more willing to exchange data if they could thereby improve their ability to track patients during a disaster, whereas others might be more interested in mobile integrated health (MIH) benefits. EMS organizations need to be willing to pay for these capabilities. Clear guidance from the HHS Office of Civil Rights on HIPAA rules should be provided regarding what hospitals can share with EMS (e.g., what EMS should routinely receive)

There is a need to balance top-down requirements with local, state, and regional successes in the field. The SAFR model has been a proven example of success that many jurisdictions, HIEs, and EMS organizations could follow and learn from. For example, San Diego County (California) uses ePCRs from three different vendors and has 17 hospitals. The regional HIE maps and routes the county's data using the SAFR model. The county also uses a statewide ONC grant to enable two hospitals and one ePCR system to connect to one another. A state grant will be used to extend the system to all ePCRs and all EDs in the county.

## Enhanced and Evolving Payment Systems

Incentives do not currently exist to ensure that ePCR systems purchased by EMS agencies have data exchange capability with HIEs included. The Affordable Care Act gives CMS funding to enhance HIEs, but this opportunity expires on September 30, 2021. States are interested in this program continuing, but may need to seek other funding sources if it expires, such as working with their Medicaid agency on information technology architecture funding. If CMS required data exchange for reimbursement eligibility, providers would have an incentive.

Data sharing and integration allows for evolving payment models and changing incentive structures. For example, an organization developed a mobile, secure, and interoperable HIE that allows patients to own and control their own health information. The system integrates ED, ambulance, and telemedicine data stored on patients' mobile devices. Patients are responsible for ensuring that their identity in the system is correct and that the record contains all of their medical information. Insurance companies might pay for such systems and embed the costs into their premiums.

### *Hospital EHRs and Integrating EMS Data*

*The Code of Maryland Regulations requires EMS clinicians to enter patient data into ePCR and hospitals to include that information in the EHR for that patient. The EMS report—minimally the short form—must therefore be entered into the hospital dashboard. Maryland uses CRISP to provide in-hospital and primary care provider access to pre-hospital care data. CRISP is a regional HIE serving Maryland, West Virginia, and the District of Columbia. More than 100 hospitals, 1,500 ambulatory care practices, 200 skilled nursing facilities, and other health care organizations submit data to CRISP.*

*EMS agencies in Maryland cities and counties share a statewide ePCR that uses NEMSIS 3.4. EMS clinicians must complete the record within 24 hours, although many do so within an hour. A short form captures main points to share with the ED clinician. The pre-hospital record completed by EMS clinicians arrives at a central repository and is sent within minutes to CRISP. Any clinician working with that patient has access to the patient's information in CRISP.*

*CRISP is evolving to expand its data elements to emulate a completed record, export the ePCR to a designated space in the hospital EHR, and enable bi-directional data flow between EMS and CRISP.*

*For more information, see [CRISP](#).*

## Patient Care Beyond the Data

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### Focus on Patient Outcomes

Maintaining focus on patient outcomes is an important consideration as advances in data sharing and integration are implemented. The adoption and expansion of HIEs, data collection and sharing systems, and health data standards should clearly tie back to improving patient outcomes. Data loses value if it is simply integrated into a chart and are not communicated to the right people. To help patients, the right data needs to be presented to the right person at the right time.

### Real Time Communication

Real-time communication is a crucial component to accompany data as it is exchanged and integrated. Data might appear in a chart, but it is still important to communicate between pre-hospital and hospital care on the most clinically relevant information. To help patients, information needs to be updated and communicated in real time and in a way that is compatible with the workflow. For example, an alert that a patient is coming to the ED could be sent to all members of the team that will care for the patient. Platforms exist for transmitting such information. In addition, communication with patients should be required to close the loop of data sharing.

## Next Steps

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### Continue Communication and Coordination

Data sharing and integration are important topics for health care, emergency response capacity, and the American people. The associated issues are complex and will not be solved immediately. Achieving the goals of data sharing and integration will require resources. Sources of funding and other support resources must be identified, adequate, and sustainable. Therefore, FICEMS and its federal and private sector partners are committed to continuing the important discussions and coordination emphasized by the success of the Summit. Stakeholders will need to collaborate on an appropriate structure to continue this important work. This effort will need to include representatives of federal agencies as well as systems administrators, state data managers and EMS directors, medical directors, and EHR and ePCR vendors. Other important stakeholders to include are payers, such as CMS, who provide incentives to share data and can tie meaningful use to EMS data. FICEMS is sharing the Summit presentations, agenda, and other information via the [Summit website](#) at [EMS.gov](#).

### Near and Long-Term Opportunities

Opportunities to move forward in the near future include outreach on the rationale and benefits of data sharing and integration. Stakeholders can develop value propositions that support reimbursement for data sharing and integration and address HIPAA misconceptions. These efforts would also begin to address culture divisions between EMS and the broader healthcare community on data sharing and integration. Another near-term opportunity is to identify other important stakeholders, such as immunization registries, that are also working on advances in data sharing and integration. Longer term opportunities include incorporating additional valuable datasets and sources identified from those other important stakeholders, measuring outcomes using evidence-based guidelines, and integrating the needs for research and quality improvement into the NEMSIS data standard-setting process.

## Endnotes

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- <sup>1</sup> U.S. Department of Health and Human Services (HHS) Office of the National Coordinator for Health Information Technology (ONC), [Health Information Exchange Issue Brief: National Emergency Medical Services Use Cases](#), 2015
- <sup>2</sup> Centers for Medicare and Medicaid Services (CMS), [Emergency Triage, Treat, and Transport \(ET3\) Model](#), 2020
- <sup>3</sup> National Highway Traffic Safety Administration (NHTSA), [EMS Agenda 2050](#)
- <sup>4</sup> HHS ONC, [EMS Data Integration to Optimize Patient Care](#), 2017
- <sup>5</sup> Interstate Commission for EMS Personnel Practice, [EMS Compact](#), 2020
- <sup>6</sup> The Sequoia Project, [Patient Unified Lookup System for Emergencies \(PULSE\)](#), 2020
- <sup>7</sup> Public Law 104–191, [Health Insurance Portability and Accountability Act](#), 1996
- <sup>8</sup> H.R.1165 Explanatory Statement, [Division A-Departments of Labor, Health and Human Services, and Education, and Related Agencies Appropriations Act](#), 2019
- <sup>9</sup> NHTSA, [NEMSIS](#), 2020
- <sup>10</sup> Health Level Seven International (HL7), [Introduction to HL7 Standards](#), 2020
- <sup>11</sup> CommonWell Health Alliance, [Carequality and CommonWell Health Alliance Agree on Connectivity and Collaboration to Advance Interoperability](#), 2016
- <sup>12</sup> HHS ONC, [Trusted Exchange Framework and Common Agreement](#), 2019

## Appendix A. Abbreviations and Acronyms

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<b>CDC</b>	U.S. Centers for Disease Control and Prevention
<b>EMS</b>	Emergency Medical Services
<b>ET3</b>	Emergency Triage, Treat, and Transport
<b>FICEMS</b>	Federal Interagency Committee on Emergency Medical Services
<b>HHS</b>	U.S. Department of Health and Human Services
<b>NEMSIS</b>	National EMS Information System
<b>NHTSA</b>	National Highway Traffic Safety Administration
<b>REPLICA</b>	Recognition of EMS Personnel Licensure Interstate CompAct
<b>ONC</b>	Office of the National Coordinator for Health Information Technology
<b>DOT</b>	U.S. Department of Transportation
<b>HIE</b>	Health Information Exchange
<b>ePCR</b>	Electronic Patient Care Record
<b>PCR</b>	Patient Care Record
<b>ED</b>	Emergency Department
<b>EHR</b>	Electronic Health Record
<b>CMS</b>	Centers for Medicare and Medicaid Services
<b>XML</b>	Extensible Markup Language
<b>SAFR</b>	Search, Alert, File, and Reconcile
<b>PULSE</b>	Patient Unified Lookup System for Emergencies
<b>ASPR</b>	Office of the Assistant Secretary for Preparedness and Response
<b>HIPAA</b>	Health Insurance Portability and Accountability Act
<b>ECG</b>	Electrocardiogram
<b>NPI</b>	National Patient Identifier
<b>CDA</b>	Clinical Document Architecture
<b>HL7</b>	Health Level Seven International
<b>FHIR</b>	Fast Healthcare Interoperability Resources
<b>IHE</b>	Integrating the Healthcare Enterprise
<b>TEFCA</b>	Trusted Exchange Framework and Common Agreement
<b>HIN</b>	Health Information Network
<b>CRISP</b>	Chesapeake Regional Information System for Our Patients
<b>MIH</b>	Mobile Integrated Health

### National Pre-Hospital & Hospital Data Integration Listening Session Summit

## Meeting Agenda

29 January 2020

JW Marriott Hotel, Salon F  
1331 Pennsylvania Avenue, NW  
Washington, DC 20001

8:00 – 8:30 AM	<b>Registration</b>
8:30 – 8:45 AM	<b>Welcome, Introductions, and Opening Remarks</b> <b>Dave Wade, MD, National Security Council (NSC)</b> <ul style="list-style-type: none"><li>• <i>Welcome and Opening Remarks</i></li><li>• <i>Introductions, Participants</i></li></ul>
08:45 – 9:00 AM	<b>Purpose of the Listening Session Summit</b> <b>Overview of the Project, Expected Outcomes</b> <ul style="list-style-type: none"><li>• <i>National Security Council (NSC)</i> <i>Dave Wade, MD</i></li><li>• <i>Office of the National Coordinator for Health Information Technology (ONC)</i> <i>Andrew Gettinger, MD</i></li><li>• <i>Department of Transportation (DOT)</i> <i>Jon Krohmer, MD</i></li></ul>
9:00 – 10:00 AM	<b>Panel 1: Hospital Data Collection (Electronic Health Records - EHR)</b> <b>Moderator: Tom Kirsch, MD</b> <p>0900: ePCR Integration into a Hospital EHR System James Killeen, MD, Director of Urgent Care Services Clinical Informatics Fellowship Director UC San Diego Health Sciences</p> <p>0910: Hospital EHRs Role in Integration Roland Phillips, MD, Executive Physician Strategist - Emergency Medicine, Cerner Corporation</p> <p>0920: Overview of Hospital EHRs and Challenges of Integrating EMS Data Ted Delbridge, MD, Executive Director, Maryland Institute for Emergency Medical Services Systems</p> <p>0930: Participants and Panel Discussion</p>
10:00 – 10:15 AM	<b>Break</b>

10:15 – 11:35 AM	<b>Panel 2: Pre-Hospital Data Collection (Electronic Patient Care Records (ePCR))</b> <b>Moderator: Jon Krohmer, MD</b> 10:15: Overview of Pre-Hospital Data Collection in the US Clay Mann PhD, Director, National Emergency Medical Services Information System (NEMSIS), Technical Assistance Center (TAC) 10:25: EMS Services Role in Integration Brian Frankel, Prince Georges County Fire Department 10:35: Overview of Pre-hospital PCRs and Challenges of Integrating EMS Data Richard Hale, Director, Data and Integration Products, ESO Solutions 11:05: Participants and Panel Discussion
11:35 – 12:20 PM	<b>Lunch</b> (on your own)
12:20 – 1:30 PM	<b>Panel 3: Data Exchange between EMS and Hospitals and Other Healthcare Sites: What the Future Will Look Like</b> <b>Moderator: Andy Gettinger, MD</b> 12:20: Why is Integration of EMS data into Hospital Data Systems (EHRs) Important? What will health information data exchange look like in 2030? <ul style="list-style-type: none"> <li>• The evolving health care environment</li> <li>• The Value Proposition Current undertakings <ul style="list-style-type: none"> <li>○ National Emergency Medical Services Use Cases</li> <li>○ Emergency Triage, Treat, and Transport (ET3)</li> </ul> </li> <li>• Health Information Exchanges (HIEs)</li> <li>• What should happen in the next few years?</li> </ul> Panel members: <ul style="list-style-type: none"> <li>• Lindsey Ferris, DrPH, Senior Director, Audacious Inquiry</li> <li>• Gregg Margolis, PhD, Director of Health Policy Educational Programs and Fellowships, National Academy of Medicine</li> <li>• W. Scott Cluett III, Director, Office of Emergency Medical Services, Bureau of Health Care Safety and Quality, Massachusetts Department of Public Health</li> </ul> 12:50: Participants and Panel Discussion
1:30 – 2:30 PM	<b>What We Heard</b> <b>Dave Wade, MD</b>
2:30 – 2:45 PM	<b>Break</b>
2:45 – 3:15 PM	<b>Next Steps</b> <b>Jon Krohmer, MD</b>
3:15 – 3:30PM	<b>Wrap-Up and Parting Thoughts</b> <b>Andy Gettinger, MD</b>
3:30 PM	<b>Adjourn</b>



## Appendix C. Biographies

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### **David S. Wade, MD, FACS**

#### **Director of Medical Preparedness**

#### **Resilience Policy Directorate, National Security Council**

Dr. David Wade graduated from the United States Naval Academy in 1977. He earned his Medical Degree at the Uniformed Service University of the Health Sciences (USUHS) in 1981. A Surgical Oncologist and critical care physician, he served in the Navy Medical Department in progressive clinical and leadership assignments.

He joined the FBI in 2008 as the Chief Medical Officer and served in that capacity for six years. He joined the Department of Homeland Security as the Deputy Chief Medical Officer in 2017. Dr. Wade is a Fellow of the American College of Surgeons and a Clinical Professor of Surgery at USUHS. He is a Hayward Award winning graduate of the Naval War College.

### **Andrew Gettinger, MD**

#### **Chief Clinical Officer**

#### **Office of the National Coordinator for Health Information Technology**

Dr. Andrew Gettinger serves as Chief Clinical Officer for ONC. He is a professor of anesthesiology emeritus at Geisel School of Medicine at Dartmouth and was formerly the Chief Medical Information Officer (CMIO) for Dartmouth-Hitchcock and associate dean for clinical informatics at Geisel.

Dr. Gettinger has extensive experience in the field of health information technology. He led the development of an EHR system at Dartmouth and subsequently was the senior physician leader during Dartmouth's transition to a vendor-based EHR. Dr. Gettinger's clinical practice and research has been focused both on anesthesiology and critical care medicine, and on information technology as it applies generally to health care.

Dr. Gettinger founded the clinical informatics group at Dartmouth. He has been an active participant in the policy debates regarding patient privacy at both the state and federal level, testifying before the senate HELP committee and participating as a member of the New Hampshire legislative taskforce on privacy. He served in Senator Orrin G. Hatch's office as a Robert Wood Johnson health policy fellow.

Dr. Gettinger received his A.B. from Dartmouth College and his M.D. from Dartmouth Medical School. He trained at the Hartford Hospital, Boston Children's Hospital, and Dartmouth-Hitchcock Medical Center in anesthesiology, pediatric anesthesiology, and critical care medicine. He is board certified in anesthesiology, critical care medicine and was among the inaugural cohort of physicians certified in clinical informatics by the American Board of Preventive Medicine in 2013.

### **Jon Krohmer, MD**

#### **Director, Office of Emergency Medical Services**

#### **National Highway Transportation Safety Administration, Department of Transportation**

Jon R. Krohmer, M.D., FACEP, FAEMS is the Director of the NHTSA Office of EMS in DOT. He also recently served as the Acting Associate Administrator for Research and Program Development at NHTSA. Previously, he was the Principal Deputy Assistant Secretary for DHS OHA and DHS Deputy Chief Medical Officer and served as the DHS Acting Assistant Secretary for Health Affairs and Chief Medical Officer. He also served as the DHS Immigration and Customs Enforcement Assistant Secretary for Immigration Health Services. Dr. Krohmer was Director of EMS, emergency medicine residency in the Department of Emergency Medicine at the Spectrum Health Butterworth Campus and Associate Professor of Emergency Medicine at the College of Human Medicine at Michigan State University and EMS Medical Director of Kent County (MI) EMS. Dr. Krohmer graduated from the

University of Michigan Medical School and completed his EM residency and EMS Fellowship at Wright State University in Dayton, Ohio. He is board certified in EM and EMS.

**Thomas D. Kirsch, MD, MPH, FACEP**  
**Director, National Center for Disaster Medicine and Public Health**  
**Uniformed Services University**

Dr. Kirsch is the Professor and Director of the National Center for Disaster Medicine and Public Health at the Uniformed Services University. He is a globally recognized disaster researcher and educator and has authored over 140 scientific articles, editorials, and textbook chapters. He has worked in dozens of disasters in the USA and around the world for international, government and non-government organizations as a responder and scientist.

**James Killeen, MD**  
**Clinical Professor, Departments of Emergency and Hyperbaric Medicine**  
**University of California San Diego**

Dr. Killeen is a UCSD Clinical Professor for both the Emergency Department, Hyperbaric Medicine and Biomedical Informatics. He is lead informaticist for the Emergency Department and the Fellowship Director for Clinical Informatics and Chief Medical Officer for San Diego Health Connect. Dr. Killeen is a leader in the informatics community in interoperability and clinical integrity, educating clinicians on the reality of today's technology, security and how policy relates to care. Dr. Killeen specializes in Alternative Care models and Telehealth for community care in providing healthcare needs within the patient setting based on clinical needs. He provides International Telehealth consultations to travelers and international clinicians and is considered an innovator and strategy leader for Next-Gen Healthcare needs and processes such as drone delivery systems, medical devices, Emergency/911 care and alternative care models.

**Roland Phillips, MD**

Dr. Rolland Phillips is a graduate of Eastern Virginia Medical School and subsequent Vascular Surgery Research Fellowship. He came to Charlotte for his training in Emergency Medicine at Carolinas Medical Center but quickly found a home in the Carolinas. His first clinical practice following residency he founded and managed a democratic Emergency Medicine group in Concord, North Carolina where he continues to practice today. Dr. Phillips is Board Certified in Emergency Medicine and Clinical Informatics.

As the US health informatics landscape developed, Dr. Phillips was an early adopter and has been a leader for whichever EHR vendor is at his disposal. He has won several awards for physician user design and continues to have a heavy influence through his role as an Emergency Medicine Executive Physician Strategist for Cerner Corporation.

Dr. Phillips remains steadfast in his belief that one's primary contribution remains in one's community, and he has maintained this loyalty over the last decade as the Emergency Medicine health informatics technology leader at Atrium Health - one of the largest not-for-profit healthcare systems in the US.

**Theodore R. Delbridge, MD, MPH, FACEP**  
**Executive Director**  
**Maryland Institute for Emergency Medical Services Systems**

Dr. Delbridge is a graduate of The Pennsylvania State University and Eastern Virginia Medical School. He completed residency in Emergency Medicine and fellowship in Emergency Medical Services at the University of Pittsburgh. Also at the University of Pittsburgh, he earned a Master of Public Health degree in Health Services Administration. Within different systems, Dr. Delbridge has held emergency medical services leadership

positions. He has served as the chief of emergency services at UPMC-Presbyterian Hospital in Pittsburgh and chair of the Department of Emergency Medicine at East Carolina University. In those posts, he shared responsibility for transitioning hospital emergency services to new electronic medical records and logistics tools. Since 2019, Dr. Delbridge has served as the executive director of the Maryland Institute for Emergency Medical Services Systems, responsible for coordinating the state's diverse EMS system components.

**Clay Mann, PhD**

**Principal Investigator**

**National Emergency Medical Services Information System**

Dr. Mann is a Professor in the Department of Pediatrics at the University of Utah School of Medicine. Dr. Mann completed a Ph.D. from the University of Texas in Preventive Medicine and Master's Degrees from the University of Utah focused on Statistics/Epidemiology and Business Administration. Dr. Mann has authored/coauthored 150 peer-reviewed research articles dealing with traumatic injuries to children, trauma system evaluation, cardiac and trauma resuscitation and the role of emergency medical services in health care. Dr. Mann has served as principal investigator or co-investigator on 50 federal, state, foundation or industry grants. He has conducted several randomized, controlled community trials dealing with cardiac resuscitation, acute coronary disease education and paramedic training. Currently, Dr. Mann serves as the Principal Investigator for the NEMSIS Technical Assistance Center, funded by the Office of EMS at NHTSA.

**Brian Frankel**

**Deputy Fire Chief**

**Prince George's County Fire/EMS Department**

Brian Frankel is currently serving as the Deputy Fire Chief for the Prince George's County Fire/EMS Department where he is assigned as the Operations Deputy overseeing the Emergency Services Command. With over 20 years' experience in the Fire/EMS service, he has served in various positions to include: Advanced Life Support Training Coordinator, EMS Quality Assurance Officer, Battalion Chief in Emergency Operations and a Firefighter / Paramedic. In addition, he has also served in the United States Air Force as an Aeromedical Technician with several operational deployments to Kuwait, Saudi Arabia and Bahrain. In his current position, he oversees all aspect of Fire rescue and EMS operations to include the newly formed Mobile Integrated Healthcare team.

Brian has completed an Associate's Degree in Applied Health Sciences through the Community College of the Air Force and a Bachelor's Degree in Fire Science from the University of Maryland University College. He is an experienced EMS instructor and has taught numerous initial and continuing education EMS programs throughout the region. In addition to his teaching experience, Brian serves on numerous State and local EMS committees, most notably is his recent appointed by the Governor of Maryland to the State EMS Advisory Council and his appointment to the Board of Directors of the Maryland Patient Safety Center.

One of Brian's most notable accomplishments are the development and implementation of the Prince George's County Mobile Integrated Health program. This program was designed to address the needs of those patients who frequently utilize the 911 system and the local emergency departments. As a result of this new and innovative approach, the county has seen dramatic reductions in 911 use for our enrolled patients. The opportunity to get EMS involved in the greater health picture has led to many unforeseen benefits. It has opened the door to conversations of the importance of EMS in the greater healthcare community and the opportunities to reduce over utilization of healthcare services.

**Richard Hale**  
**Director of Regulatory and Data Products**  
**ESO Solutions**

Richard Hale is the Director of Regulatory and Data Products at ESO. In his tenth year at ESO, his role focuses on the Regulatory and Healthcare division's data and interoperability strategy. Richard has served as a technical advisor for Health Level Seven, the National EMS Information System Technical Assistance Center, the EMS COMPASS performance measure project, as well as several performance improvement projects sponsored by the National Association of State EMS Officials. He has more than 20 years of experience in the development, design, architecture, and management of large-scale enterprise, software as a service, and cloud service offerings.

**Lindsey Ferris, DrPH**  
**Senior Director**  
**Audacious Inquiry**

Lindsey currently serves as the Program Director of HIE Projects at CRISP, the health information exchange serving Maryland and DC, and partnered with West Virginia's Health Information Network. She has been with CRISP for 7.5 years and is responsible for managing public health, behavioral health, and Prescription Drug Monitoring Program projects. She holds a Doctor of Public Health from Johns Hopkins.

**Gregg S. Margolis, PhD, NRP**  
**Director, Health Policy Fellowships and Leadership Programs**  
**National Academy of Medicine**

Gregg S. Margolis, PhD, is the Director of Health Policy Fellowships and Leadership Programs at the National Academy of Medicine (NAM). In this role, Dr. Margolis leads the NAM's six nationally renowned health policy fellowship and leadership programs with a mission of building health policy leadership and expertise for the future.

Prior to joining the NAM, Dr. Margolis served as the Director of the Division of Health System Policy for the Office of the Assistant Secretary of Preparedness and Response at HHS. Prior to his federal service, Dr. Margolis held leadership and faculty positions at the University of Pittsburgh, The George Washington University, and the National Registry of EMTs. In 2009-2010, he was the first paramedic to be an RWJF Health Policy Fellow where he served as a health staffer in the US Senate.

Dr. Margolis holds a PhD in administrative and policy studies from the University of Pittsburgh and has over 20 years of clinical experience as a field and flight paramedic. He is the author of over a hundred publications and frequent speaker in a wide array of topics in health policy, leadership development, emergency medicine, and disasters/public health emergency preparedness.

**W. Scott Cluett III**  
**Director, Office of Emergency Medical Services**  
**Department of Public Health, Commonwealth of Massachusetts**

Scott Cluett serves as the Director for the Office of Emergency Medical Services for the Commonwealth of Massachusetts, Department of Public Health. Prior to this role, Scott was the Program Manager for the MIH Program where his team successfully launched the first state office for MIH in the nation. Before joining the Department of Public Health in 2018, Scott enjoyed many years of pre-hospital care working in systems along the East Coast including the New York City Fire Department and Boston MedFlight. Scott was also one of the primary architects of a Mobile Integrated Health Program that helped pave the way for MIH in Massachusetts. As Director for the Office of EMS, Scott and his team develop treatment protocols, certify EMTs and Paramedics,

regulate ambulance services and their vehicles, and administer a statewide data reporting system (MATRIS) that collects data in accordance with the NEMSIS database standard. Scott also maintains oversight of the MIH program in Massachusetts.

**Rachel Abbey MPH**

**Public Health Analyst**

**Office of the National Coordinator for Health Information Technology**

Rachel Abbey, MPH, is a Public Health Analyst with the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology. Rachel is currently with ONC's Office of Policy and supports ONC's public health, emergency preparedness and Emergency Medical Services and health information exchange activities. Before joining ONC in 2013, Rachel served for nine years as the Project Manager for the Montgomery County, Maryland Advanced Practice Center for Public Health Preparedness. Over the span of her career, Rachel has worked at the national, state and local level for almost 20 years in the areas of environmental health, emergency preparedness, violence prevention, maternal and child health and health information technology. Rachel received her Bachelor of Arts in Peace and Global Studies from Earlham College and her Master's in Public Health from the University of Maryland, School of Public Health.

**Eric Chaney MS, MBA**

**EMS Specialist**

**Department of Transportation**

Eric Chaney is an EMS Program Manager with over 30 years of experience developing and interpreting regulatory requirements, laws, doctrine, policy, and program guidance for local, state, and federal fire and emergency services (F&ES) agencies. In his current role as an EMS Specialist with DOT, he coordinates the FICEMS, the National EMS Advisory Council and serves as the Project Manager for the National EMS Information System.

Prior to his current position Mr. Chaney held the position of Department of Homeland Security (DHS), Office of Health Affairs Branch Chief for the Medical First Responder Coordination Branch. Eric has worked as an EMS Analyst with Commander, Navy Installations Command (CNIC) F&ES and held the position of Chief, Division of Licensure and Medical Affairs for the Maryland Institute for Emergency Medical Services.

Eric holds a Master of Business Administration Degree from Mount Saint Mary's College, a Master of Science Degree in Emergency Health Services from University of Maryland Baltimore County, Paramedic certification from the National Registry of Emergency Medical Technicians, and is a Six Sigma Green Belt.